

# Registration

for  
90th Annual Meeting  
The Ohio Academy of Science

The College of Wooster  
Wooster, Ohio  
April 24-25-26, 1981

Meal Reservations and Payment Must Be Received  
by April 22

Make checks payable to The College of Wooster  
mail to Mr. Gary Thompson  
Conference Coordinator  
The College of Wooster  
Wooster, Ohio 44691  
(216) 264-1234

Name		
Last	First	Initial
Street		Apt. No.
City	State	Zip
Academy member? <input type="checkbox"/> yes <input type="checkbox"/> no		
Faculty <input type="checkbox"/> Student <input type="checkbox"/> Other <input type="checkbox"/>		
Field of Interest _____		
Employer or School _____		
Registration Fee \$6 (Student \$2) No. _____ @\$ _____ \$ _____		
Luncheon - Sat., April 25 No. _____ @\$4.50. . . . \$ _____		
Banquet - Sat., April 25 No. _____ @\$8.00. . . . \$ _____		
Geology Field Trip Box Lunch, Sun., April 26,		
No. _____ @\$3.50 _____		
Botany Field Trip Box Lunch, Sun., April 26,		
No. _____ @\$3.50 _____		
Total Enclosed . . . . . \$ _____		



# THE OHIO JOURNAL OF SCIENCE

Vol. 81

April Program Abstracts

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90th ANNUAL MEETING  
APRIL 24,25,26,1981

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## PARKING

Campus parking is available near most buildings. See center spread map. Watch for signs.

## REGISTRATION

Registration is required and will be held in the Lobby of Freedlander Theatre. The registration desk will be open on Saturday, April 25 from 8 a.m. to 3 p.m.

Members of the Academy are urged to register in advance by returning the registration form in this program. Registrations and meal reservations must be mailed to Gary Thompson, Conference Coordinator, The College of Wooster, Wooster, Ohio 44691. Please mail them in time to reach Wooster by April 22. This will give time to prepare name tags and plan dining arrangements.

An Academy representative will be present in the registration area to accept dues, membership applications, and contributions to The Ohio Academy of Science Endowment Fund.

## MEALS

Academy Luncheon (Saturday, April 25, Kittredge Dining Hall Buffet style. Served from 12:00 - 1:30 p.m. Price: \$4.50)

Academy Banquet (Saturday, April 25, Kittredge Dining Hall Buffet at 6:30 p.m. Price: \$8.00)

Visitors without meal reservations may eat off-campus. A list of restaurants is included at the end of this program.

## HOUSING

Overnight housing must be arranged by the individual. A list of local motels is included at the end of this program.

## EXHIBITS AND COFFEE

The work of The Ohio Academy of Science receives the support of many of the state's leading corporations and institutions. Some of these organizations have scientific and educational exhibits that may be viewed near the registration desk. Coffee will also be served.

## GENERAL SCHEDULE

### Friday, April 24, 1981

- |            |   |
|------------|---|
| 8:00 A.M.  | Registration for Junior Academy (See Separate Program). Ramada Inn.   |
| 12:00 Noon | OAS Executive Committee Luncheon and Meeting. Lowry Center, rooms 247-248.  |
| 3:30 P.M.  | Ohio Biological Survey Executive Committee. Meeting Room 119. Lowry Center.   |
| 4:30 P.M.  | OAS Fellowship Committee, 119 Lowry Center.   |
| 6:00 P.M.  | Joint Academy Council - OBS Executive Committee Dinner. Advance reservations required. Lowry Center.                            |
| 8:00 P.M.  | OBS Advisory Council Meeting. Wishart Hall, Room 101.   |
|            | OAS Council Meeting. Lean Lecture Room, lower level, Wishart Hall.  |
|            | Illustrated Public Lecture: "The Lands and Wildlife of Australia" by Dr. Timothy Berra, Zoologist, OSU Mansfield. McGaw Chapel. |

Saturday, April 25, 1981

- 8:00 A.M. - Registration  
3:00 P.M. Lobby of Freedlander Theatre (map location #21).  
Exhibits  
Lobby of Freedlander Theatre (#21).  
Poster Sessions  
Lobby of Freedlander Theatre (#21).  
8:30 A.M. -  
5:00 P.M. Sectional Meetings. See specific section for location and time.  
11:00 A.M. - All Academy Lecture.  
McGaw Chapel.  
Introductions and Welcome: Dr. William M. Baird, Vice President for  
Academic Affairs, The College of Wooster.  
Address: "How Oceans are Made: Exploring the Mid-Ocean Rifts".  
Dr. Tanya Atwater  
Geophysicist  
University of California, Santa Barbara  
12:00 Noon - All Academy Buffet Luncheon. Kittredge Dining Hall. Reservations  
1:30 P.M. required.  
Special tables are reserved for:  
Editorial Board, The Ohio Journal of Science  
Ohio Biology Teacher's Conference  
Past Presidents' Council  
6:30 P.M. Annual Banquet  
Kittredge Dining Hall (map location #8)  
Toastmaster: Dr. William M. Baird, Vice President for Academic  
Affairs, The College of Wooster  
Greetings: Dr. Henry Copeland, President, The College of Wooster  
Response: Dr. Liberato J. A. DiDio, Past President of The Ohio  
Academy of Science  
Awards and Recognition Program:  
President's Address: "Ohio's Promiscuous Sunflowers"  
Dr. T. Richard Fisher  
Professor of Botany  
Bowling Green State University  
9:00 P.M. Business Meeting  
President T. Richard Fisher, Presiding

Sunday, April 26, 1981

- 9:00 A.M. - Geology Field Trip  
3:00 P.M. Plant Sciences Field Trip  
Parking Lot behind Freedlander Theatre



ALL ACADEMY LECTURE  
Saturday, April 25, 1981  
11:00 A.M. McGaw Chapel

"How Oceans are Made: Exploring the Mid-Ocean Rifts"

by

Dr. Tanya Atwater, Geophysicist  
University of California, Santa Barbara

Tanya Atwater was born in Los Angeles and moved to Santa Barbara with her family when she was 14, attending Santa Barbara High School. She went to undergraduate school in electrical engineering at Massachusetts Institute of Technology for three years, then switched to geophysics at the University of California, Berkeley, to get her B.A. in 1965. She did her graduate work at Scripps Institution of Oceanography, receiving her Ph.D. in 1972. She joined the faculty at the Massachusetts Institute of Technology and taught there for six years. Last year she returned to the west coast and accepted a professorship in the Department of Geological Sciences at the University of California, Santa Barbara.

Tanya has traveled extensively, working in South America, Central Asia, Georgia and Iceland, and in 1973 she participated in the National Academy of Sciences Exchange with the Soviet Union. Her oceanographic expeditions have taken her to many parts of the Pacific and Atlantic Oceans.

She is an author of numerous scientific publications including a classic paper in 1970 which set the plate tectonic framework for western North America and the San Andreas fault. Her primary research has been on the mid-ocean ridges. She participated in the Alvin cruises which discovered the hot vents, and she was expedition chief scientist for similar work in the Atlantic.

Her honors include Phi Beta Kappa, a Sigma Xi national lectureship, and a Sloan Fellowship. She serves on the State Department's Public Advisory Committee on the Law of the Sea and various national geological committees. She was chosen as the Scientist of the Year by World Book Encyclopedia and featured in a full length story in their Science Year for 1979. She has also appeared in T.V. productions and various popular articles.

## SYMPOSIA

Saturday, April 25, 1981

10:15 A.M.      Invertebrates in the Classroom. Invertebrate animals have long been the mainstay of experimental and demonstration organisms in science education. Discussions here will be the use of frogs as a convenient source of parasites, invertebrates for the study of blood cells and hydra-prey relationships.

This symposium is of special interest to high school and college biology teachers. Sponsored by Zoology and Science Education Sections. See Science Education Section for abstracts.

1:30 P.M.      Planning In a Period of Scarcity. What are the challenges facing the planner and decision-maker in a near future period which promises generally to be one of increasing competition for decreasing value stocks--of jobs, of fuels, of amenities. As a premise, we are faced with an almost certain transition period of economic and environmental constraints, the effects of which are now obvious in both Ohio and the nation. Capital, natural resources, trade and availability of employment are being affected by scarcity. Planners and decision makers will increasingly be involved in decisions which require allocation of scarcer benefits and more serious disbenefits than previously. Can we identify and understand the nature of the choices and decisions which will increasingly characterize this transitional period. What types of information are required if the outcomes are to be equitable and result in a minimal amount of social conflict? What scenarios must be drawn to provide a conceptual base for interrelating information so that conceptual frameworks for decision-making can be developed? How can a social system like ours, pluralistic, increasingly interconnected and complex, deal with problems fundamental to its long term survival in a period of scarcity of crucial resources and energy? Sponsored by the Administrative Sciences and Planning Section.

2:15 P.M.      Promoting Ohio Research and Development. Ohio is well known for its leadership in science, engineering and technology. Research and development are vital to the continued well being of our economy. This symposium, arranged by the Section of Economics in cooperation with the Ohio Development Financing Commission, will provide an opportunity for both academic and business leaders to explore areas of mutual interest and concern. See Economics Section for abstracts.

## FIELD TRIPS

Saturday, April 25, 1981

1:30 P.M.      Tour of OARDC Conservation Research Projects. Key faculty members will be present to host a tour through the principal conservation-related research facilities at the 2000-acre Ohio Agricultural Research and Development Center Headquarters. The tour will be by private cars with several stops and short walks; car pooling is encouraged. The tour will include the solar pond constructed to evaluate solar energy use for heating greenhouses and rural residences in Ohio's climate; the double-layered, air-inflated plastic covers over the Center's greenhouses in which polystyrene pellets are pumped at night to reduce fossil fuel requirements by 90 percent; the shade tree evaluation plantings, dawn redwood, green spiral silver fir, rhododendron and yew collections, and the rose garden in the Secrest Arboretum; the agronomy plots where no-till, conservation and conventional tillage methods are demonstrated to evaluate soil retention and loss; and the dairy research unit, where heat is recovered from milk as it is cooled and barn rooftop solar collectors are utilized. Meet in the Conference Room, in Fisher Auditorium. The OARDC is located one-half mile south of US 30, on US 250 and State Route 83. Sponsored by the Conservation Section.

3:30 P.M.

Brown's Lake Bog. Brown's Lake Bog is one of the few relict bog areas in Ohio. It contains many rare and unusual plants, such as sphagnum moss, pitcher plant, sundew, rose pogonia, bog rosemary, large cranberry, highbush blueberry, red and black chokeberry, and many species of fern.

Geologically Brown's Lake Bog is a kettle hole, a depression that occurs in stratified sand, gravel and silt deposits laid down by glacial meltwater. The depression results from the wasting away of a large ice block buried in these deposits some 13,000 years ago. Ecological succession has resulted in a gradual filling of the pond with plant detritus (peat) outward from the shore.

The bog is owned and protected by the Ohio chapter of The Nature Conservancy. Conservancy staff will be on hand to guide this field trip. The bog is located 14 miles southwest of Wooster; transportation will be by private cars; car pooling is urged. Field clothes desirable. Footing will be wet and boggy. Meet in front of Fisher Auditorium at OARDC (see above). Sponsored by the Conservation Section.

Sunday, April 26, 1981

9:00 A.M.

Geology Field Trip. The annual Ohio Academy of Science field trip will leave from the parking lot behind Freedlander Theatre at 9:00 A.M. on Sunday, April 26. Transportation will be by private car; the trip should return to Wooster by 4:00 P.M., but people may elect to depart from near Berlin, Ohio, seven miles east of Millersburg about 3:00 P.M.

The trip will travel south from Wooster on Route 83 along the valley of Killbuck Creek where glacial deposits can be observed. The Mississippi-Pennsylvania contact will be seen south of Holmesville after which various Holmes Limestone Company strip mines will be visited. Exposures of the Brookville (#4) Coal, Putnam Hill Limestone, Lower Kittanning (#5) and Middle Kittanning (#6) coals and associated rock units will be examined. A brief tour is planned of a wash plant where sulfur, clay and shale are separated from the Brookville coal. The trip will end near Berlin where the Holmes Limestone Company total reclamation program has restored strip-mined areas to agricultural use (see abstract by Mullet, Mullet, Mullet, and Cropp).

9:00 A.M.

Plant Sciences Field Trip. "On the Trail of the Glacial Boundary". 9:00 A.M. - 3:00 P.M. Participants will depart from the parking lot behind Freedlander Theatre for a day of exploring the glacial terminus and resulting plant communities. Stops include Troyer's Hollow and Doughty Valley which features a hemlock stand and example of a glacial stream reversal, views of the terminal moraine west of Charm, Ohio, a lunch stop and tour of The Wilderness Center at Wilmot, and for those with wading gear and stamina, a visit to Brewster Bog which features a bog mat and another example of stream reversal. Charlie King, Ohio Biological Survey, will lead the tour.



## OUR HOST

### THE COLLEGE OF WOOSTER

The College of Wooster was founded in 1866 and held its first classes on September 8, 1870, with a faculty of 5 and a student body of 30 men and 4 women.

In its early years, the College campus consisted of 22 acres of beautiful oak grove and one building. This has grown to its current size of 35 academic and residential buildings on 300 acres. The buildings are mostly of the English collegiate gothic type, constructed principally of cream-colored and rough brick.

In 1901, the College's principal building was destroyed by fire and was replaced with five other buildings within one year's time. Originally the College was a university with eight divisions in all. In 1915, however, a bitter fight took place within the faculty over the mission of the institution. The decision was made to concentrate on becoming an outstanding college of liberal arts, devoting itself exclusively to undergraduates and after that date all other divisions were either or were disassociated from the College. For example, the Medical College was moved to Cleveland where it became the Medical College of Case University.

Other important events in the history of the College include President Wishart's vigorous defense of the freedom of inquiry in a clash with William Jennings Bryan over the examination of the subject of evolution, the practice of student research projects which led Karl Compton to work with George Bacon on x-rays in the first decade of this century, Arthur Compton's receipt of a Nobel prize in 1927, and the establishment by Howard Lowry of Independent Study and the Faculty Leave Program in the 1940s.

Under the Independent Study program, every student completes a one-term independent research project in the junior year, and in the senior year devotes two terms working with a faculty adviser on a research project which leads to a senior thesis. Over the years, many of these papers have been published, either jointly with the supervising faculty member or independently by a student. Because every faculty member at The College of Wooster supervises undergraduate research, a research leave program has been established which makes faculty members eligible for a year's leave at full pay every fifth year. This program greatly helps the College in attracting and retaining a very strong faculty.

Since its founding, The College of Wooster has maintained a tradition of excellence in science instruction. In addition to Nobel Laureate Arthur Compton, it numbers four Rhodes Scholars among its graduates. Further, the Danforth Foundation indicates the College ranks in the top 50 schools in the nation in the number of Danforth Fellowships. A recent study (Tidball and Kistiakowsky, "Baccalaureate Origins of American Scientists and Scholars," Science, 193: 646, 1976.) has ranked Wooster in the top six colleges in the United States in the percentage of its graduates who obtained doctoral degrees; and according to statistics issued by the National Academy of Sciences of the Baccalaureate Origins of Ph.D. recipients from 1920-1976, on the list of 677 colleges, Wooster ranks tenth in biology, sixth in chemistry, seventh in mathematics, fourth in physics, and first among all Ohio colleges and universities in geology. This tradition is exemplified by an analysis of the careers of 1948-1976 alumni which shows 19% of the male graduates and 9% of the female graduates currently working as college science professors or research scientists.

Campus facilities of particular interest to the Academy are the following:

Andrews Library was dedicated May 19, 1962. It currently contains approximately 500,000 items and seats 700 readers. Over 200 carrels are available for students engaged in Independent Study. In addition, to most of the College's library resources, the building contains several seminar rooms, a lecture room, audio-visual facilities, a language laboratory, and the College's Academic Computing Center.

Mateer Hall was dedicated in 1968 to the study of biology and related fields. It contains classrooms, laboratories, the biology library, individual study labs, the greenhouse and a lecture hall.

Scovel Hall originally housed both biology and geology, but now is devoted exclusively to the Geology Department.

Severance Hall, a companion building to Scovel Hall, houses the Department of Chemistry including the chemistry library.

Taylor Hall is devoted to the Department of Mathematics and Physics and is named for the second President of the College, Dr. A. A. E. Taylor. The Physics Department occupies the basement and the first floor. The Mathematics Department is located on the second floor.

Wishart Hall is the home of the Department of Speech and contains the Freedlander Speech and Hearing Clinic, WCWS--the campus radio station, the Department of Speech offices and the Lean Lecture Room. Attached to Wishart Hall is the Herman Freedlander Theatre, one of the College's showpieces.

Lowry Center is the student center and contains the snack bar, the main dining room, ballroom, the bookstore, the faculty lounge, student government offices, and meeting rooms.

Kittredge Dining Hall is the site of the Academy's Saturday luncheon and banquet.



Students enjoying a spring afternoon outside of Kauke Hall at The College of Wooster.

## LOCAL SECTION HOSTS

Chairman of Local Arrangements  
Dr. William M. Baird  
Vice President for Academic Affairs  
The College of Wooster

<u>Section</u>	<u>Local Host</u>	<u>Department</u>
A. Zoology	Dr. Andrew A. Weaver	Biology
B. Plant Sciences	Dr. James E. Perley	Biology
C. Geology	Dr. F. W. Cropp	Geology
D. Medical Sciences	Dr. John Reinheimer	Chemistry
	Dr. Donald L. Wise	Biology
E. Physics and Astronomy	Dr. Russell H. Kulas	Physics
F. Geography	Dr. Marcus D. Pohlmann	Political Science, Urban Studies
G. Chemistry	Dr. Paul L. Gaus	Chemistry
H. Science Education	Dr. William E. Hoffman	Education
I. Anthropology and Sociology	Dr. Karen Dugger	Sociology
J. Conservation	Dr. Floyd L. Downs	Biology
K. Genetics and Cell Biology	Dr. Claude W. Hinton	Biology
L. Mathematics and Computer Science	Dr. Charles R. Hampton	Mathematics
M. Psychology	Dr. Grace Bell	Psychology
N. Junior Academy	Dr. William M. Baird	Administration
	Mr. Gary Thompson	Conferences
	Dr. Donald L. Wise	Biology
O. Engineering	Dr. Donald T. Jacobs	Physics
P. Administrative Sciences and Planning	Dr. Mark R. Weaver	Political Science
Q. Economics	Dr. Richard D. Reimer	Economics
R. Ecology	Dr. Floyd L. Downs	Biology
S. Information and Library Sciences	Mr. C. Dean Leidy	Andrews Library

### Other Resource Personnel

Mr. George T. Richard	News Service
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